Trade and Industrial Education
Course: HVACR I
Course Code #5741
2 Credits

School Year _____

Term:____Fall____Spring

Student:	Grade:
Teacher:	School:
Number of Competencies in Course:	**57**
Number of Competencies Mastered:	
Percent of Competencies Mastered:	

STANDARD 1.0: Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
1.1	Cultivate leadership skills.		
1.2	Participate in SkillsUSA-VICA as an integral part of instruction.		
1.3	Assess situations within the school, community, and workplace and apply values to develop and select solutions.		
1.4	Demonstrate the ability to work cooperatively with others.		

STANDARD 2.0: Students will evaluate career opportunities and career paths within the heating, ventilation, air conditioning, and refrigeration industry.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
2.1	Explain titles, roles, and functions of individuals in the heating, ventilation, air conditioning, and refrigeration industry.		
2.2	Investigate employment and entrepreneurial opportunities in the heating, ventilation, air conditioning, and refrigeration industry.		
2.3	Evaluate personal characteristics required for working in the heating, ventilation, air conditioning, and refrigeration industry.		
2.4	Investigate post secondary education, professional organizations, and trade publications appropriate for continuing education.		

STANDARD 3.0: Students will demonstrate the principles of safety and health procedures in the heating, ventilation, air conditioning, and refrigeration industry.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
3.1	Implement safety procedures established by the Environmental Protection Agency (EPA) and Occupational Safety & Health Administration (OSHA).		
3.2	Analyze and categorize safety and health hazards and their prevention and treatment in the heating, ventilation, air conditioning, and refrigeration industry.		
3.3	Exhibit acceptable dress and personal grooming identified by the heating, ventilation, air conditioning, and refrigeration industry.		
3.4	Demonstrate first aid practices.		
3.5	Comprehend the importance of a safe work environment.		
3.6	Pass with 100 % accuracy a written examination relating to safety issues.		
3.7	Pass with 100% accuracy a performance examination relating to safety.		
3.8	Maintain a portfolio record of written safety examinations and equipment examinations for which the student has passed an operational checkout by the instructor.		

STANDARD 4.0: Students will identify, select, use, maintain, and store tools, instruments, and equipment used in the heating, ventilation, air conditioning, and refrigeration industry.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
4.1	Illustrate the function and purpose of HVAC/R hand and power tools.		
4.2	Select meters and instruments of the HVAC/R industry for a specific job.		
4.3	Demonstrate the correct use, storage and care of HVAC/R equipment.		
4.4	Properly maintain and store HVAC/R hand tools.		

STANDARD 5.0: Students will analyze and implement procedures to mitigate hazards associated with heating, ventilation, air conditioning, and refrigeration work.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
5.1	Evaluate and mitigate the potential risk of injury from electrical shock, burns, and moving parts for a given task.		
5.2	Use and care for protective equipment for HVAC/R workers.		
5.3	Follow procedures for maintaining a breathable atmosphere when working on HVAC/R systems where appropriate.		
5.4	Handle oxygen, fuel, and inert gas cylinders according to industry practice and regulations.		

STANDARD 6.0: Students will demonstrate proper refrigerant handling and usage as mandated by Environmental Protection Agency (EPA) Section 608 of the Clean Air Act.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
6.1	Interpret standards as mandated by EPA Section 608 of the Clean Air Act.		
6.2	Interpret the Clean Air Act and EPA requirements.		
6.3	Prepare for Core, Type I and Type II technician certification of the EPA Proper Refrigerant Usage and Handling Examination.		
6.4	Interpret Department of Transportation (DOT) regulations concerning transportation of refrigerants.		

STANDARD 7.0: Students will relate the principles of physics to the operation of heating, ventilation, air conditioning, and refrigeration systems.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
7.1	Comprehend the concept of temperature and its measurement.		
7.2	Analyze the concept of specific heat and heat content.		
7.3	Examine the concept of latent heat associated with change of phase.		
7.4	Quantify the transfer of heat due to conduction, convection, and radiation.		
7.5	Examine the effect of pressure on the boiling point of liquids.		

STANDARD 8.0: Students will comprehend and explain the processes involved in the basic mechanical refrigeration cycle.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
8.1	Analyze the process associated with heat absorption in the evaporator.		
8.2	Analyze the process associated with heat transfer by the condenser.		
8.3	Analyze the process that occurs at the expansion device.		
8.4	Analyze the process that occurs at the compressor.		
8.5	Compare and contrast the properties of common refrigerants.		

STANDARD 9.0: Students will comprehend, install, and service major components in mechanical refrigeration systems.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
9.1	Comprehend, install, and service compressors in residential and small commercial refrigeration systems.		
9.2	Comprehend, install, and service condensers in residential and small commercial refrigeration systems.		
9.3	Comprehend, install, and service evaporators in residential and small commercial refrigeration systems.		
9.4	Comprehend, install, and service fixed and adjustable metering devices in residential and small commercial refrigeration systems.		

STANDARD 10.0: Students will assemble, charge, and service refrigerant systems.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
10.1	Assemble and test refrigeration components and piping.		
10.2	Charge mechanical refrigeration systems.		
10.3	Recover and recycle refrigerants.		

STANDARD 11.0: Students will demonstrate proper use and application of various refrigerants and oils.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
11.1	Categorize classes of refrigerants.		
11.2	Examine the physical and chemical properties of refrigerants.		
11.3	Categorize oils used in refrigeration and air conditioning systems.		

STANDARD 12.0: Students will communicate skills required in the heating, ventilation, air conditioning, and refrigeration industry.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
12.1	Communicate and comprehend oral and written information typically occurring in the HVAC/R industry workplace.		
12.2	Solve problems and make decisions using a logical process.		
12.3	Use teamwork skills to accomplish goals, solve problems, and manage conflict within groups.		

STANDARD 13.0: Students will demonstrate interpersonal and employability skills required in the heating, ventilation, air conditioning, and refrigeration industry.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
13.1	Infer relationships between work ethics and organizational and personal job success.		
13.2	Demonstrate attitudes conducive to workplace success.		
13.3	Maintain a neat and orderly work area.		
13.4	Assess implications of diversity for communities and workplaces.		
13.5	Exhibit positive employability behaviors.		
13.6	Develop individual time management and work sequencing skills.		

Additional Comments _____